

Light Weight Insulated Spherical Cryotank, Phase I

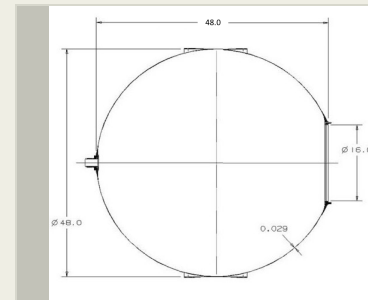
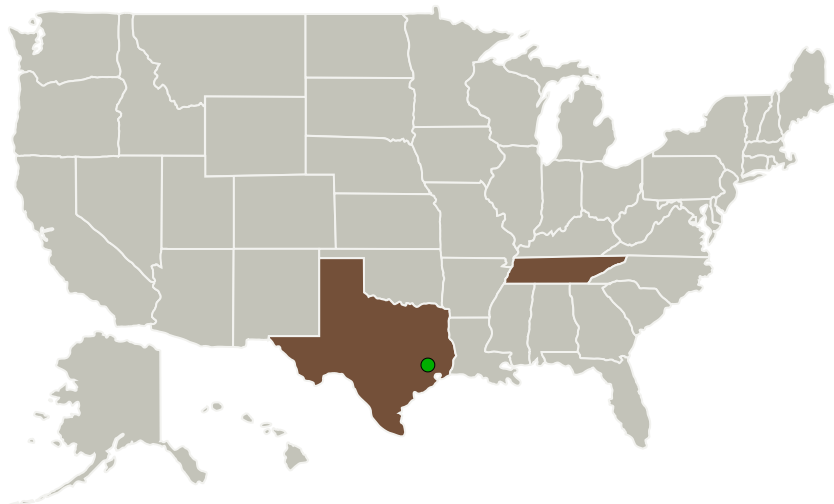
Completed Technology Project (2015 - 2015)



Project Introduction

GTL proposes a dramatic improvement in launch and space vehicle technology for NASA space and exploration missions. The modified BHL (mBHL) technology provides significant reductions in weight while exceeding the helium permeability requirements needed to meet NASA long term cryogenic propellant storage requirements. The proposed effort builds upon a substantial DARPA investment in BHL cryotank technology for shorter storage duration mission applications and takes the next step, extending the technology to long-term storage cryogenic propellant applications. The phase I effort conducts trade studies to identify and define the optimum metal laminate coating technology that can be incorporated into a BHL cryotank composite. The proposed effort will also evaluate several lightweight multifunctional insulation design concepts synergistic with mBHL technology and identify optimum solutions to be incorporated in the phase II program. With the proposed development of mBHL, the advantages of the technology will be achieved for long term cryogenic propellant storage, providing the means to significantly lower cryotank mass, reduce permeability and provide a significant improvement in propellant tank insulation performance reducing propellant boil off, thereby enhancing NASA's ability to achieve its exploration and science mission goals for less cost.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Gloyer-Taylor Laboratories LLC	Lead Organization	Industry	Tullahoma, Tennessee
● Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
Tennessee	Texas

Project Transitions

▶ **June 2015:** Project Start

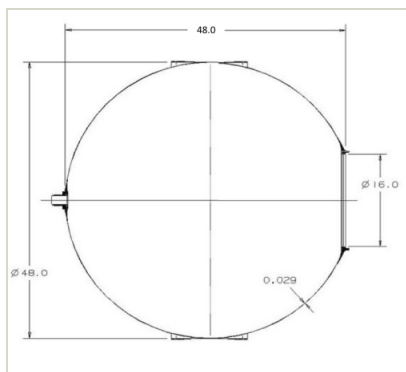
✓ **December 2015:** Closed out

Closeout Summary: Light Weight Insulated Spherical Cryotank, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/139151>)

Images



Briefing Chart Image

Light Weight Insulated Spherical Cryotank, Phase I
(<https://techport.nasa.gov/image/133059>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Gloyer-Taylor Laboratories LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Zachary Taylor

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.2 Electric Space Propulsion
 - └ TX01.2.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System